2.0 PROPOSED ACTION AND ALTERNATIVES

The objective of this EA is to evaluate the proposed action and alternatives in accordance with NEPA. The proposed action is the issuing of a Presidential permit by DOE to allow the construction, operation, maintenance, and connection of a single-circuit, 138-kV transmission line between Sharyland's Railroad Substation and the U. S. border with Mexico. The objective of Sharyland's proposed project is to connect the transmission systems of ERCOT and CFE. There are no generation facilities to be constructed as part of the proposed action. Direct environmental effects are evaluated in this EA for the transmission facilities in the United States only.

The alternatives developed and evaluated in this EA are alternative routes to interconnect Sharyland's system with CFE's, plus a "No Action" alternative. Sharyland's initial evaluation resulted in the identification of three potentially viable corridors for transmission interconnection in the Rio Grande Valley with CFE.

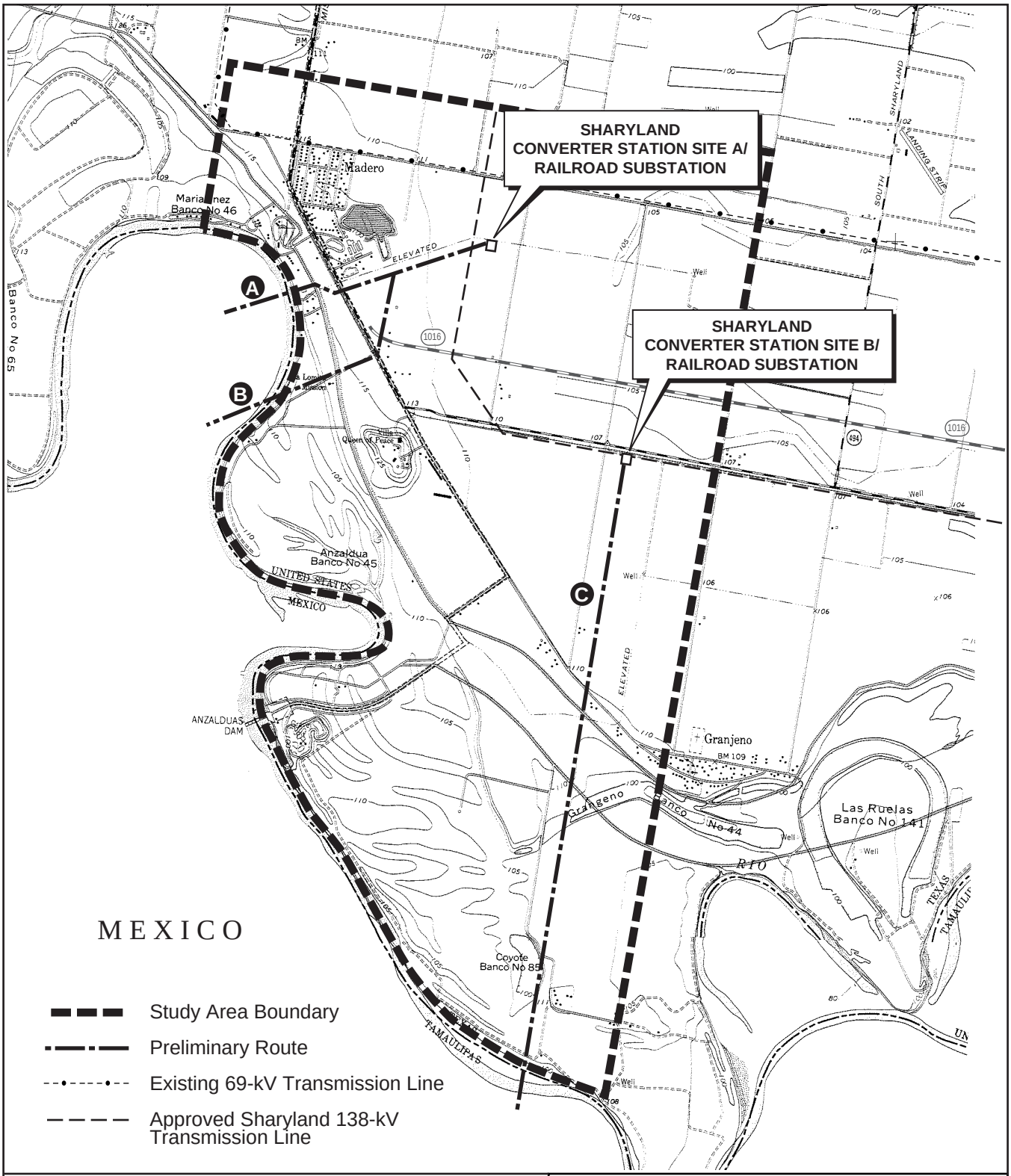
Sharyland Corridor Identification Process. In the initial phase of Sharyland's corridor identification process, it delineated a study area boundary, contacted local, state, and federal agencies and officials, reviewed existing information regarding the study area, including U.S. Geological Survey (USGS) topographic maps, Texas Department of Transportation (TxDOT) county highway maps, color aerial photography, and other published information. Sharyland then conducted a more-detailed review of the three preliminary routes (Figure 2-1), including a field reconnaissance in May 2003. This review involved an evaluation of engineering, land use, and environmental constraints in the study area.

This evaluation led to the designation of two primary alternative routes (Figure 2-2). These routes are summarized below. The primary routes, as well as some of the important land use and environmental constraints within the study area, are shown on Figure 2-3 (map pocket).

The alternatives evaluated in this EA are the construction of the proposed transmission facilities from the Railroad Substation to the international border on two alternative routes, and the No Action Alternative. A third alternative route and an alternative construction method, which were considered but rejected, are also briefly discussed below.

2.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, no Presidential permit would be issued and the transmission facilities proposed by Sharyland would not be constructed. The purpose and need for the action, as defined in Section 1.2.1 of this EA, would not be realized and projected benefits to the electrical systems of both the U.S. and Mexico would not occur. Potential impacts, whether short-term or long-term, direct or indirect, project-specific or cumulative, would not occur.



north

0 2000 4000 feet

Base Map: USGS 7.5' Quadrangles; Hidalgo and Mission, Texas

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- Environmental Consulting
- Surveying

Figure 2-1

PRELIMINARY ALTERNATIVE ROUTES

SHARYLAND - DC MEXICO TIE PROJECT

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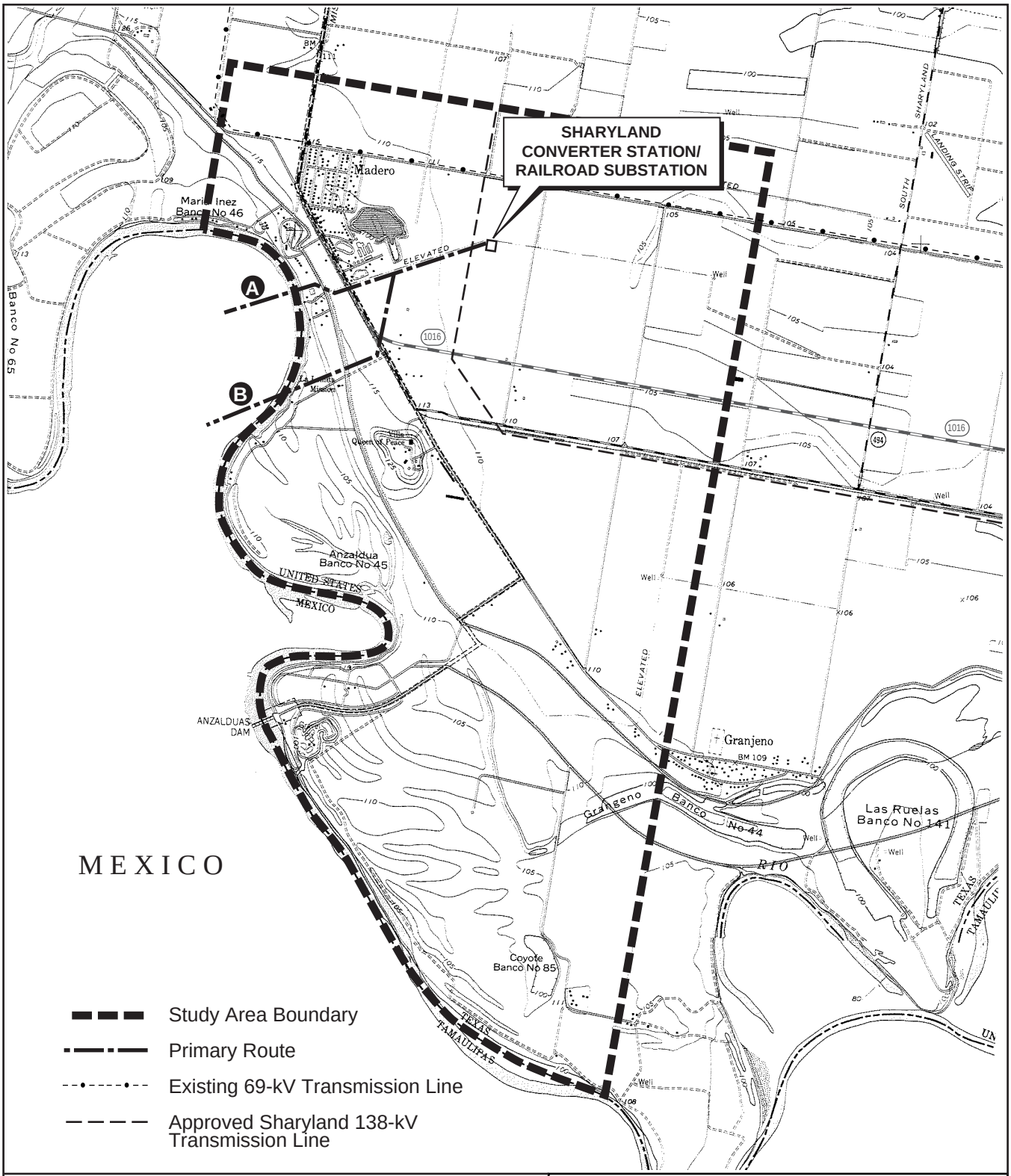

north

0 2000 4000 feet

Base Map: USGS 7.5' Quadrangles; Hidalgo and Mission, Texas

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Figure 2-2

PRIMARY ALTERNATIVE ROUTES

SHARYLAND - DC MEXICO TIE PROJECT

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The No Action Alternative would not preclude the construction, by other utilities in different locations, of other international transmission projects in the Lower Rio Grande Valley.

2.2 APPLICANT'S PREFERRED ALTERNATIVE (PROPOSED ACTION)

Proposed Route A (Figure 2-4, map pocket) starts at a dead-end structure located at Sharyland's "Railroad Substation" and proceeds directly into the proposed BTB-HVDC Converter Station, located 30.5 m (100 ft) to the west. The line would exit the west end of the Converter Station and proceed on steel or concrete single pole structures in a southwesterly direction paralleling the Old Edinburg Canal. The line would be constructed in the southern most 30.5-m (100-ft) right-of-way (ROW) of the existing 67.1-m (220-ft) Old Edinburg Canal, cross Farm-to-Market Road (FM) 1016 (Military Highway) and the St. Louis Brownsville and Mexico Railway, for a distance of approximately 990.6 m (3,250 ft). The line would turn an angle and travel in a west northwesterly direction in a new 30.5-m (100-ft) ROW for a distance of approximately 141.7 m (465 ft), crossing the Hidalgo County Irrigation District #19 canal and levee. At this point it would again turn an angle and travel in a southwesterly direction in a new 30.5-m (100-ft) ROW for 141.7 m (475 ft) to the center of the Rio Grande River, the U.S. border with Mexico, and continue across the border to the first structure in Mexico. The total length of this proposed route is 1,277.1 m (4,190 ft).

At this point, CFE would construct an additional 7.4 km (4.6 mi) of transmission to their existing 138-kV/400-kV Cumbres Substation.

2.2.1 Structure Alternatives

Sharyland evaluated a number of structure types for the proposed 138-kV transmission line. The primary structure types evaluated were single-pole structures, constructed of wood, concrete, or steel (Figure 2-5).

Based primarily on economic and maintenance considerations, the basic structure type selected for the proposed transmission line would be either single steel base plate or direct embedded concrete-pole structures.

The transmission line would be constructed with either direct embedded steel poles or with steel poles with concrete footers. The direct embedded poles would be embedded in the ground an average depth of 6.1 m (20 ft) with average diameter of 1.5 m (5 ft). Steel poles with concrete footers would require footers to be approximately 1.2 m (4 ft) in diameter with an average depth of 5.5 m (18 ft).

2.2.2 Transmission Line Design

The type of 138-kV construction utilized by Sharyland for the proposed transmission line would be single-circuit, on steel or concrete single-pole structures. The primary structure for single-circuit

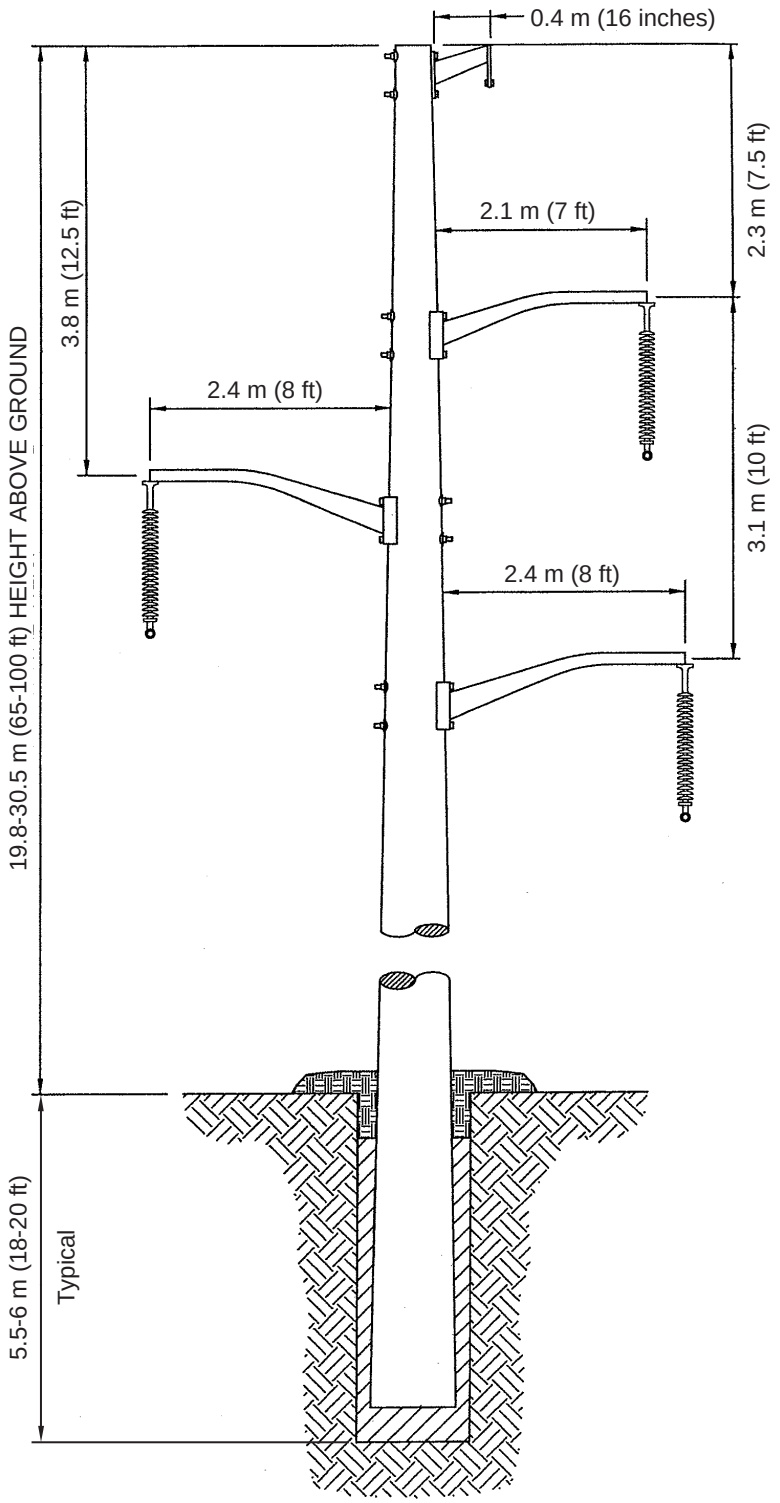

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Figure 2-5

TYPICAL SINGLE-CIRCUIT, 138-KV
SINGLE-POLE TANGENT STRUCTURE

SHARYLAND - DC MEXICO TIE PROJECT

Source: Sharyland Utilities, L.P.

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construction, shown in Figure 2-5, would utilize three upswept steel davit arms alternated on both sides of the pole (delta configuration), each supporting a 795 KCM 26/7 ACSS (Hawk) phase conductor on a suspension insulator string, and one 0.95-centimeter (cm) (⅜-inch) 7-strand high-strength steel shield wire supported from an attachment at the apex of the pole. The poles would be designed for direct embedment into the ground with either a concrete foundation or steel-pole base plate. The configuration would have a basic pole height of approximately 25.9 m (85 ft) above ground level. The variation in structure height would range from a minimum of 19.8 m (65 ft) to a maximum of 30.5 m (100 ft), again depending upon variations of terrain. The single-pole line would have a ruling span of approximately 152.4 m (500 ft). Depending upon terrain and man-made factors, spans would range from approximately 121.9 to 198.1 m (400 to 650 ft).

2.2.3 Converter Station

Located adjacent to the planned Sharyland 138-kV line and along the proposed international transmission line would be the HVDC "Back-to-Back" converter station that consists of a device to convert 138-kV AC to DC, a connecting length of DC buswork, and a device to convert the DC to 138-kV AC. Both main components of the converter station would be located within a single structure surrounded by external peripheral gear covering an area of approximately 30.5 m by 91.4 m (100 ft by 300 ft). Additionally, a 138-kV switch yard would be located at the converter site. The approximate project footprint would be 2.8 ha (7 ac). The current use of this site and the surrounding area is cropland. This land is in a crop rotation program and sugar cane is currently under cultivation.

2.2.4 Construction Procedures

Bonded contractors would construct the line under the supervision of Sharyland. Access to the ROW would be from public roads and other utility ROWs unless permission is otherwise obtained from landowners, or other access routes are preferred by landowners. The access road to the converter station site would disturb approximately 0.6 ha (1.6 ac) of land. The road would be approximately 15 m (50 ft) wide with slopes and drainage, and approximately 427 m (1,400 ft) long (from the nearest public road to the site).

The majority of the area crossed by either of the proposed routes would be cleared agricultural land. However, if heavy groundcover and/or trees are encountered, bulldozers would be used to clear the trees and undergrowth. If necessary, clearing would be conducted by mechanized equipment, or by hand in any areas designated as environmentally sensitive or wetlands. Little, if any, clearing would be required for the converter station site. Additional backfill material would be brought in to raise the elevation of the foundation for proper drainage. A small amount of brush and one tree may need to be cleared along the transmission line ROW. Any construction debris would be disposed of according to local government laws and regulations. Erosion-prone areas would be seeded in order to revegetate them as quickly as possible.

2.2.5 Maintenance

Maintenance of the ROW would be conducted as required, depending on the amount of growth in the ROW. This maintenance would consist of mowing the ROW. No permanent access roads are expected to be required for construction of the proposed line, although upgrading of existing roads or construction of new temporary roads may be necessary for proposed converter station construction. Periodic inspections of the structures and line itself would be conducted to assure safety and reliability.

2.3 ALTERNATIVE ROUTE (ROUTE B)

Alternative Route B (Figure 2-4, map pocket) would start at a dead-end structure located at the Railroad Substation and proceed directly into the proposed adjacent BTB-HVDC Converter Station. The line would exit the west end of the Converter Station and proceed on steel or concrete single pole structures in a southwesterly direction paralleling the Old Edinburg Canal. The line would be constructed in the southern most 30.5-m (100-ft) ROW of the existing 67.1-m (220-ft) Old Edinburg Canal for a distance of approximately 592.8 m (1,945 ft). The line would turn an angle and travel in a southerly direction in a new 30.5-m (100-ft) ROW, cross FM 1016 (Military Highway) and the St. Louis Brownsville and Mexico Railway for a distance of approximately 524.9 m (1,722 ft). At this point it would again turn an angle and travel in a southwesterly direction in a new 30.5-m (100-ft) ROW, cross the Hidalgo County Irrigation District #19 canal and levee for 701 m (2,300 ft) to the center of the Rio Grande River and continue to the first structure in Mexico. The total length of this proposed route is approximately 1,818.7 m or 1.8 km (5,967 ft or 1.1 miles).

At this point, CFE would construct an additional 7.4 km (4.6 mi) of transmission to their existing 138-kV/400-kV Cumbres Substation.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER ANALYSIS

The alternative identification process resulted in a decision to eliminate one routing alternative, Alternative C (Figure 2-1), for the following reasons:

- the overall length of this route compared to the other alternatives (approximately three times longer)
- uncertainties about the exact location and design of the proposed Anzalduas Freeway and International Bridge, a new United States-Mexico port of entry, in the very narrow corridor available at the Rio Grande crossing
- the possibility that the route would have to cross a portion of the Gabrielson Unit of the Lower Rio Grande Valley National Wildlife Refuge (LRGV NWR), which would require a “compatibility determination” from the FWS, with no guarantee that a ROW would be granted.

Also eliminated was construction of buried transmission facilities. The alternative of constructing the transmission line underground was determined to be at least 10 times more expensive than the preferred overhead construction. In addition, the high water table in the area would be detrimental to underground connections, and an underground line would be more difficult to maintain.